ZONE CABLING

Are we ready?

Miodrag Kovanovic

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Business & Marketing Development Manager at TR Services

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THE EDGE

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CONNECTED BUILDINGS ARE HERE

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AGENDA

- ★ NEW CHALENGES
- ★ DESIGN DRIVERS
- ★ STANDARDS
- ★ ANSI BICSI STANDARDS FOR IB
- ★ CHANGE – DIGITAL TRANSFORMATION
- ★ THE DIGITAL CEILING
- ★ HOW TO DO ZONE CABLING
- ★ CONCLUSION
- ★ ADVICE

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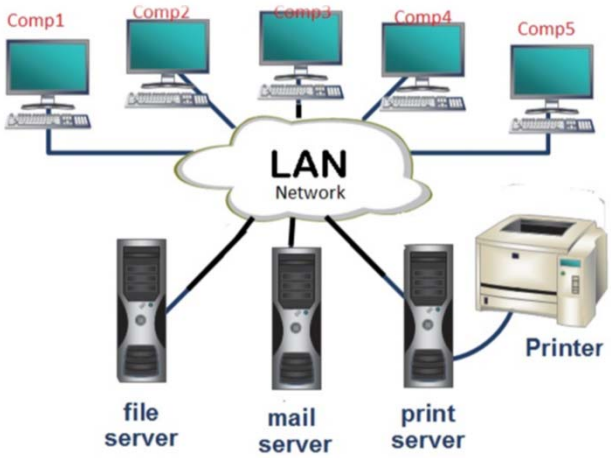
SMART vs. INTELLIGENT

- Smart: Performing actions based on direct input of information or data
- Intelligent: Performing actions based on common sense, experience, and the ability to adapt, taking **context** into account

DESIGN DRIVERS

★ „OLD“ thinking



★ „NEW“ thinking

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- ★ ISO/IEC 11801-6 2017 Part 6: „Distributed building services“
- ★ ANSI/TIA-862-B „Structured Cabling Infrastructure Standard for Intelligent Building Systems ”
- ★ TIA TSB-184-A 2017 ISO29125 „Supporting Power Delivery Over Balanced Twisted-Pair Cabling“
- ★ ANSI/BICSI-ANSI/BICSI 007-2017 „Information Communication Technology Design and Implementation Practices for Intelligent Buildings and Premises“

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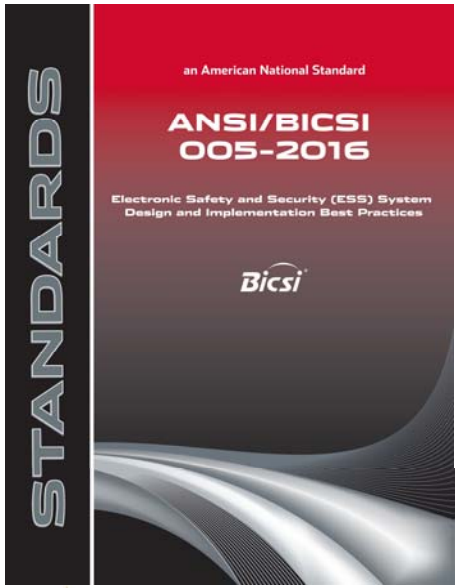
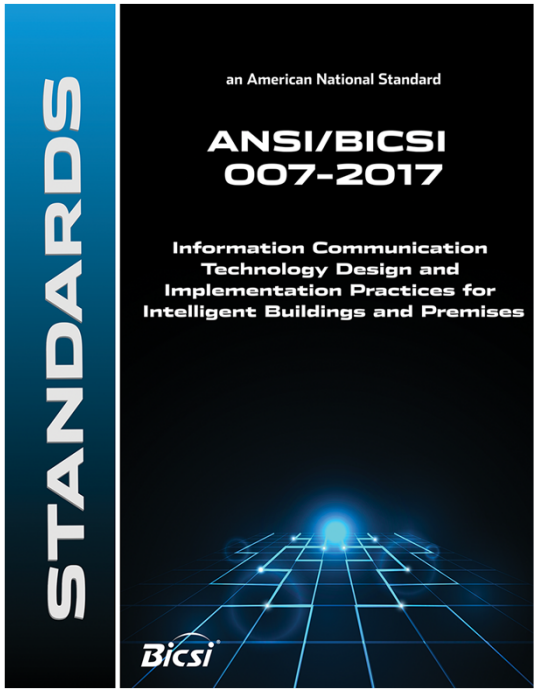
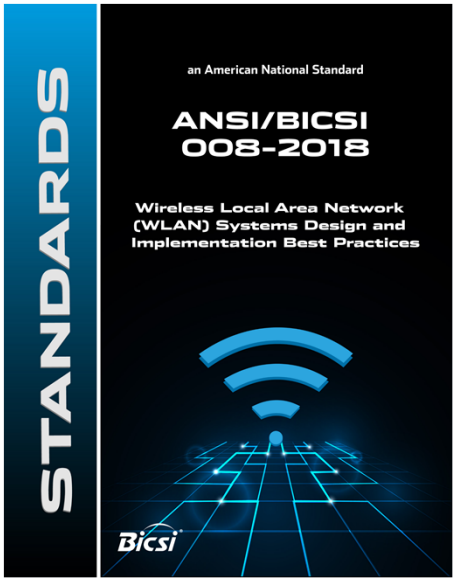
ANSI/BICSI STANDARDS FOR CONNECTED BUILDINGS







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- **PoE**
  - DC in the last mile
  - PoE - 100W per port
  - LED lightning
  - TV sets (HDBaseT)
  - Mobile devices
  - Small home appliances
  - Even fridges
  - …

- **IoT**
  - Sensors
  - Actuators
  - Cameras
  - Wearables
  - Vehicles
  - Drones
  - Tools
  - WiFi 6
  - …

- **5G**
  - VR
  - AR
  - Surveillance
  - Games
  - Shopping
  - Netflix
  - Control
  - Management
  - Healing / Repairing
  - …

- **BIG DATA**
  - Catch
  - Analyze
  - LEARN
  - Store
  - Search
  - Share
  - Exchange
  - Refresh
  - Use
  - …

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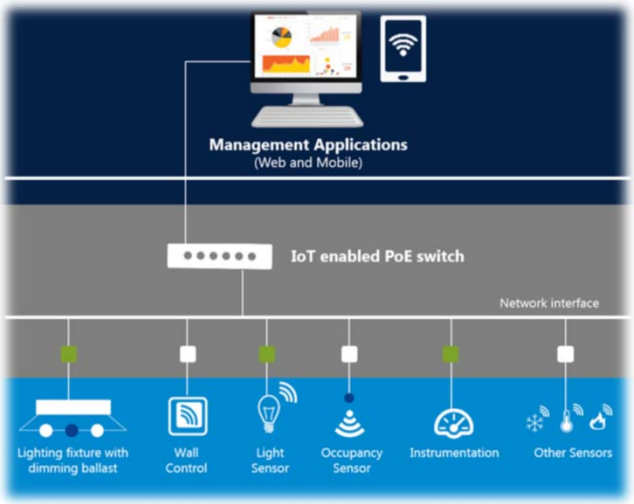
HOW DOES IT TANGLE US

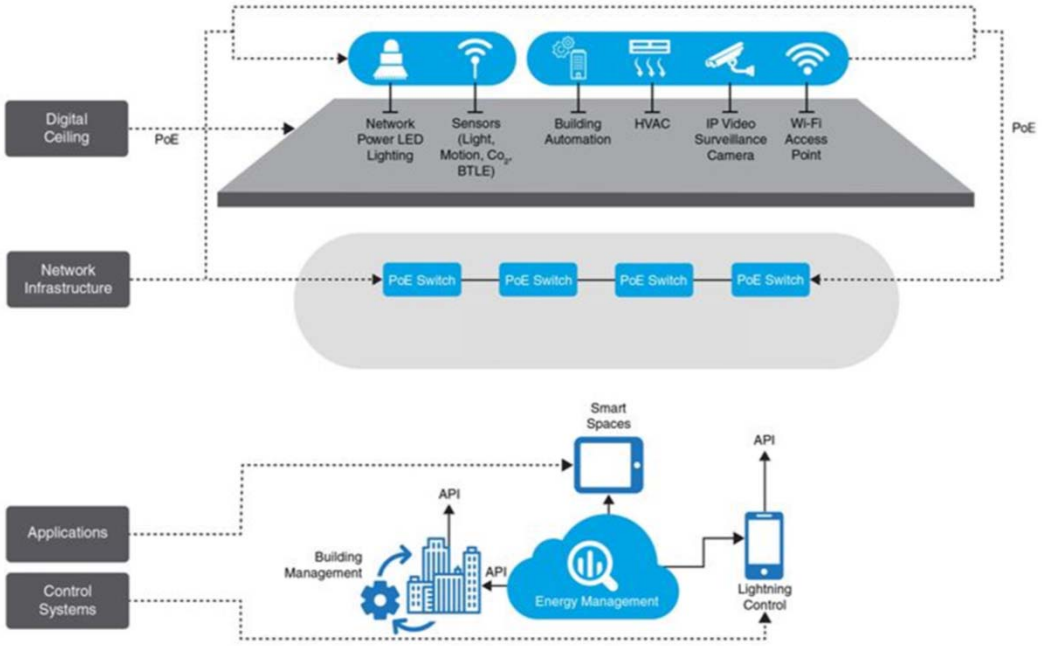
- **LIFE**
  - Smart City
  - Smart Street
  - Smart Shop
  - Smart Home
  - Smart Car
  - Smart Wearables
  - Smart Kids
  - Smart Pets
  - Smart Healthcare
  - Smart Life
- **INDUSTRY**
  - Smart Factory
  - Smart Floor
  - Smart Machine
  - Smart Tool
  - Smart Product
  - Smart Warehouse
  - Smart Delivery
  - Smart Production
- **WORK**
  - Smart Building
  - Smart Office
  - Smart Desk
  - Smart Chair
  - Smart Work

- ★ MORE REACH – 1km 10Mbs Single Pair Ethernet
- ★ MORE DEVICES – „Sensor“ Ethernet
- ★ MORE SPEED – Multi-Ethernet
- ★ MORE POWER – Different PDs
- ★ MORE PORTS – Number is multiplying
- ★ MORE SERVICES – IoT
- ★ MORE APPLICATIONS - IoT



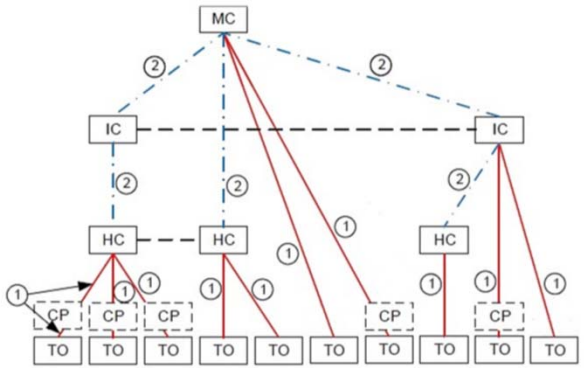
★ MORE QUALITY CABLING

THE DIGITAL CEILING



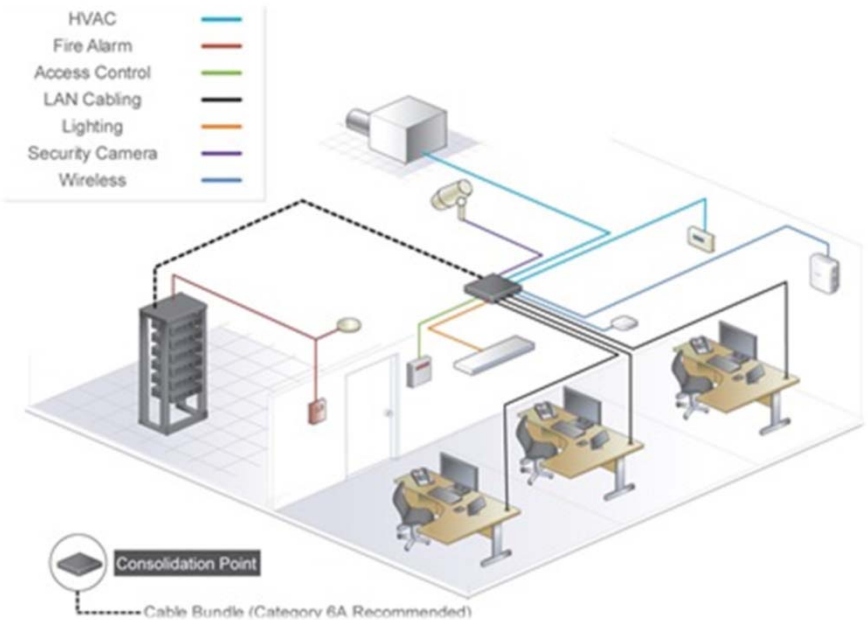
#ZONECABLING

Fully Integrated IoT Network



Legend:

MC	Main cross-connect	①	Horizontal cable
IC	Intermediate cross-connect		
DC	Horizontal cross-connect	②	Backbone cable
TO	Telecommunications outlet		
CP	Optional consolidation point		
– – –	Optional tie cabling		



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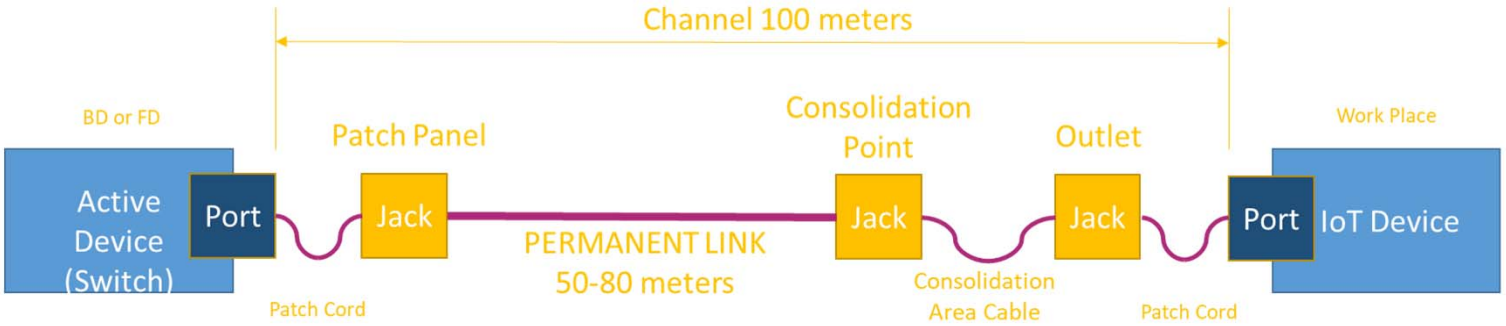
FUNDAMENTALS OF ZONE CABLING

★ 3 CONNECTOR CHANNEL



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- ★ FLEXIBILITY
- ★ IDEAL FOR SHELL & CORE - BUSINESS & INDUSTRIAL
- ★ MAC FRIENDLY – FLOOR LAYOUT
- ★ LESS INSTALLATION TIME
- ★ USE OF PRECONNECTORIZED COPPER OR FIBER CABLING
- ★ ACTIVE OR PASSIVE CP
- ★ OPTIMIZING TOTAL COST – LESS CAPEX or TOTAL OPEX
- ★ REDUCING FIRE LOADS

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A DESIGN APPROACH

★ HEXAGON DEPLOYMEWNT PATTERN

Large open spaces – office, industrial, warehouse, shopping malls

Up to 96 ports

4-5 “hexes“ each of 425 m²

Total 2000 m²

★ GRID DEPLOYMENT PATTERN

Large spaces - Schools, Universities, Hospitals

4 “squares“ each of 340 m²

Total 1400 m²

★ LEG DEPLOYMENT PATTERN

Small spaces – part of objects

24-96 ports

4 “squares“ each of 340 m²

Total 1400 m²

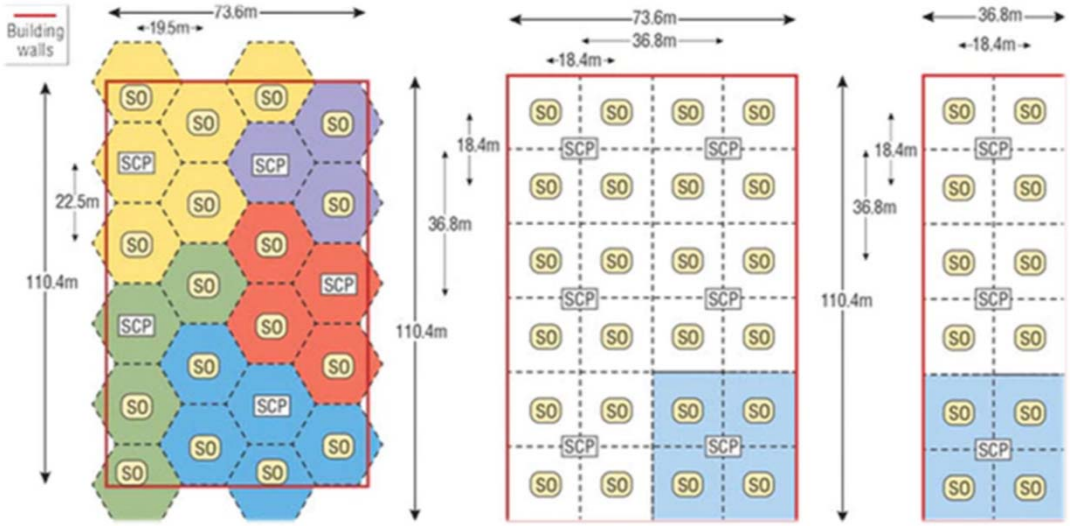

TABLE 2: Typical building device density

Use of floor space	Coverage area per building device (m²)	Number of connections in the SCP required per 2000m² (hexagon pattern)[a]		Number of connections in the SCP required per 1400m² (grid pattern)[b]	
		Minimum	Recommended	Minimum	Recommended
Classroom, data center, hospital, hotel, office, retail, or indoor parking[c]	25	80	96	56	72
Manufacturing	50	40	48	28	36

a) Each SCP is assumed to support four to five 425m² hexagon-shaped coverage areas for a total maximum usable space of 2000m².
b) Each SCP is assumed to support four 350m² square-shaped coverage areas for a total of 1400m².
c) ANSI/TIA-862-B provides an estimate coverage area per building device of 50m² for indoor parking application.

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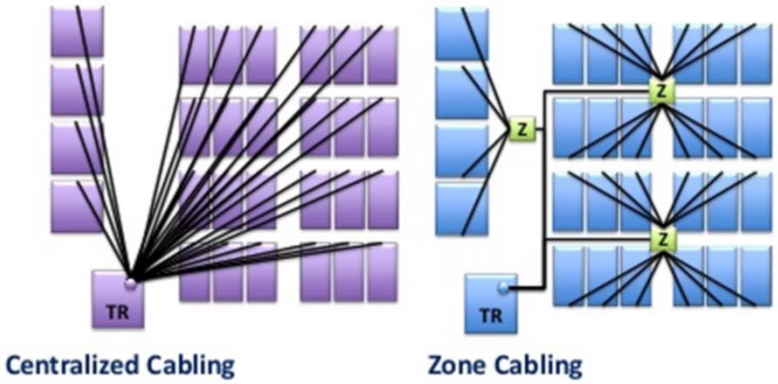
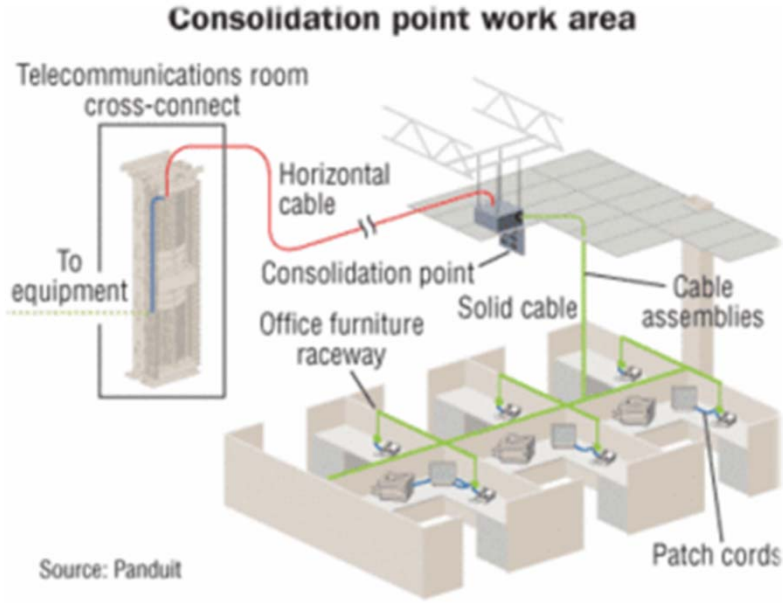
NETWORK TOPOLOGY





SCP or HCP or CP

★ ANSI/BICSI 007-2017
Intelligent Building Systems

★ HCP
★ PASSIVE
★ SERVICE AREA / SERVICE OUTLET
★ SOLID COPPER CABLE TO THE CP
★ WALL CABLE FROM CP TO OUTLET

★ 1, 2.5, 5, 10 GbE – at the moment
★ 25/40 GbE - future

★ INDVIDUAL COPPER CABLE OR
★ PRETERM COPPER CABLE BUNDLES

★ ISO/IEC 11801-6
Distributed Building Services

★ SCP
★ PASSIVE
★ SERVICE AREA / SERVICE OUTLET
★ SOLID COPPER CABLE TO THE CP
★ WALL CABLE FROM CP TO OUTLET

★ 1, 2.5, 5, 10 GbE – at the moment
★ Class EA, Class F, Class FA

★ INDVIDUAL COPPER CABLE OR
★ PRETERM COPPER CABLE BUNDLES

★ TIA/EIA-568-B.1
Open Office Cabling (ZONE)

★ CP
★ PASIVE
★ TELECOM OUTLET - WORK AREA OUTLET
★ SOLID COPPER CABLE TO THE CP
★ WALL CABLE FROM CP TO OUTLET

★ 1, 2.5, 5, 10 GbE – at the moment
★ 25/40 GbE - future

★ INDVIDUAL COPPER CABLE OR
★ PRETERM COPPER CABLE BUNDLES

★ ANSI/TIA/EIA-862-Bx : 2017
Building Automation Systems

★ HCP
★ PASSIVE
★ COVERAGE AREA
★ SOLID COPPER CABLE TO THE CP
★ WALL CABLE FROM CP TO OUTLET

★ 1, 2.5, 5, 10 GbE
★ 25/40 GbE
★ Cat.6, Cat.6A, Cat.8

★ INDVIDUAL COPPER CABLE OR
★ PRETERM COPPER CABLE BUNDLES

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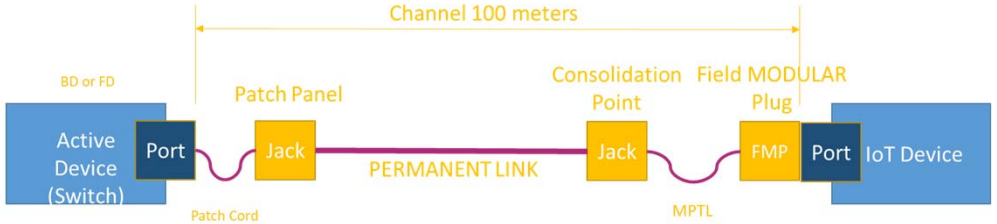
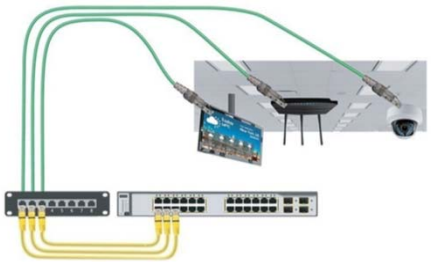
ANSI-TIA568.2-D standard - new link model named Modular Plug Terminated Link – MPTL

- ★ THIS IS NOT ZONE CABLING –
- ★ THIS IS MUTOA (TIA) or MUTO (ISO)
- ★ MAX LENGTH OF THE CABLE AFTER CP IS 20 meters
- ★ ISO IS DRAFTING MPTL: ISO/IEC TR 11801-9910





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- ★ If you want to make it “active” by putting a switch inside – than it is not a CP, and it’s not a ZONE CABLING

- ★ It is FD
- ★ Any way it could be a good approach to the DIGITAL CEILING when applying 25 or 40 Gig to the HCP

- ★ You can use cat.8.2 or MM fiber
- ★ Use of industrial fan-less switches
- ★ …

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WHATS INSIDE THE BOX

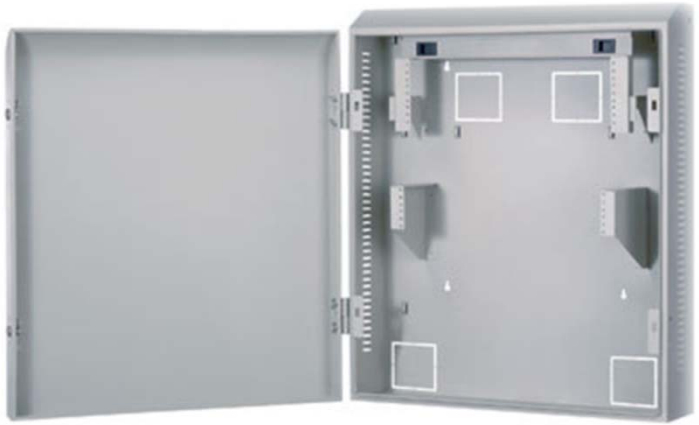
CONSOLIDATION AREA CORD

- ★ JACK to PLUG – F to M min 5, max 25 meters long
- ★ PLUG to PLUG – M to M min 5 – max 25 meters long
- ★ For Digital Ceiling and Floor – IT MUST BE CPR RATED

FLOOR CP OPTIONS

CEILING CP

WALL CP



CONCLUSION

- ★ KNOWLEDGE
- ★ RESPONISIBILITY
- ★ BEST PRACTICE
- ★ EXPERTISE

- ★ RISK
- ★ UNRESPONISIBILITY
- ★ CUTTING THE CORNERS

SLEEP TIGHT WITH

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KEEP
CALM
AND
GET IN
THE ZONE

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